63. {NEW} The method of claim 36, wherein the signal for which the user equipment unit (UE) performs the measurement is a physical control channel on the second frequency.

64. {NEW} The method of claim 36, wherein the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit (UE) were to use the second frequency for active traffic.

AF Cancel

65. {NEW} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency, whereby the user equipment unit (UE) can switch to the virtual active set of base stations when frequency measurements made at the user equipment unit (UE) so warrants, and wherein the network sends the user equipment unit (UE) an authorization message that allows the user equipment unit (UE) to autonomously update the virtual active set of base stations when the frequency measurements made at the user equipment unit (UE) so warrants.

66. {NEW} The network of claim 65, wherein the authorization message specifies one of an event or a parameter that can trigger the update of the virtual active set of base stations without the user equipment unit (UE) first having to send a measurement report to the network.

REMARKS

Reexamination of the captioned application is respectfully requested.

A. SUMMARY OF THIS AMENDMENT

By the current amendment, Applicants basically:

1. Editorially amend the specification.
2. Amend claims 1, 2, 6, 11, 17, 18, 20, 22 - 24, 26, 28 - 30, 32, 36, 37, 41, 46, 51, 53, and 55.
3. Add new claims 57 - 66 (see Section D infra).
4. Respectfully traverse all prior art rejections (see Section C infra).

B. AMENDMENTS TO THE SPECIFICATION AND CLAIMS

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made**." Amendments to the independent claims are discussed in section C infra. Amendments to the dependent claims are either for sake of consistency with the amendments to the independent claims, or (in the case of claims 18, 24, 30, and 53) for supplying an entire Equation in order to moot the claim objection set forth in the first paragraph of the Office Action.

C. PATENTABILITY OF THE CLAIMS

Claims 1-10, 13-17, 20, 22, 23, 26, 28, 29, 32, 34-45, 48-52 and 55 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,848,063 to Weaver Jr. et al and further in view of U.S. patent 6,097,954 to Kumar et al. Claims 21, 27, 33 and 56 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,848,063 to Weaver Jr. et al and U.S. patent 6,097,954 to Kumar et al and further in view of U.S. Patent 6,285,883 to Bringby.

Claims 11, 12, 18, 19, 24, 25, 30, 31, 46, 47, 53 and 54 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

All prior art rejections are respectfully traversed for at least the following reasons.

New independent claim 65 resembles allowable claim 11 rewritten as an independent claim. All other pending independent claims (1, 22, 28, and 36) require that a equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintain a virtual active set of base stations on a second frequency and perform a measurement respecting a signal on the second frequency for the base stations of the virtual active set[1]. The maintenance of the virtual active set and measurement enable the user equipment unit (UE) to switch to the virtual active set of base stations when the measurement made at the user equipment unit (UE) so warrants.

The Office Action incorrectly cites neighbor and candidate sets of U.S. Patent 5,848,063 to Weaver Jr. et al as being Applicant's claimed virtual active sets. Applicant submits that Weaver's neighbor and candidate sets do not qualify as virtual active sets. Weaver's neighbor and candidate sets are on the *same* frequency as the active set, since clearly only soft handoff is described in the context of the Weaver discussion of col. 13. *See*, e.g., col. 13, line 46 which begins as follows: "Remote unit assisted *soft* handoff operates based on the pilot signal strength of several sets of base stations as measured by the remote unit" (emphasis added).

Weaver does take into consideration that, at some point, a hard handoff may be required to a frequency other than the frequency used for diversity in the soft handoff. Some of the techniques employed by Weaver for determining when a hard handoff from a first system to a second system is to occur involves use of a pilot signal broadcast by the second system to alert the remote unit of the proximity of the second system. However, as Weaver illustrates a pilot signal, it is a signal broadcast by the second system using a frequency of the first system. *See,* e.g., the discussion of the pilot signal

[1] The limitation of performing a measurement respecting a signal on the second frequency for the base stations of the virtual active set is deemed not to narrow the original claim because measuring a signal of the virtual active set is believed to be inherent in the act of maintaining the virtual active set. Support for the actual verbiage of the amendment resides throughout the specification, including page 14 (where it is manifest that inter-frequency handover measurements are made with respect to physical control channels of the virtual active set).

in the first paragraph of column 21, and the discussion of Fig. 14 and Fig. 15 which begins in col. 26 and continues into col. 27[2].. In other words, the remote unit of Weaver does not perform measurements on frequencies operated by base stations other than those of the frequency of the Weaver active set. For this and other reasons, Weaver does not anticipate or provide a basis for denying the patentability of Applicant's claims.

D. THE NEW CLAIMS

New dependent claims have been added to further underscore certain distinctions also alluded to above. For example, new claims 57, 59, 61, and 63, dependent upon independent claims 1, 22, 28, and 36, respectively, specify that the signal for which the user equipment unit (UE) performs the measurement is a physical control channel on the second frequency. For support, *see*, e.g., page 14, lines 15 - 20, of the specification. New claims 58, 60, 63, and 64, also dependent upon independent claims 1, 22, 28, and 36, respectively, specify the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit (UE) were to use the second frequency for active traffic. For support, *see*, e.g., page 13, lines 21+ of the specification.

As mentioned above, new independent claim 65 resembles allowable claim 11 rewritten as an independent claim. New dependent claim 66 is substantially the same as allowable claim 12.

E. MISCELLANEOUS

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly solicited.

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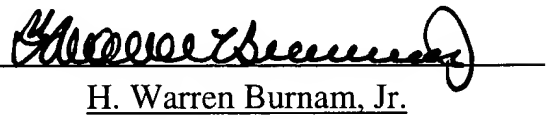
[2] Note particularly that as a remote unit traveling in system S_1 toward system S_2 begins to detect the pilot signal from pilot beacon P_1, and that pilot beacon P_1 is on the frequency F_1 of system S_1 (see paragraph bridging columns 26 and 27).

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,
NIXON & VANDERHYE P.C.

November 13, 2002

By: 

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please replace the paragraph on page 2, beginning at line 13 through line 27 with the following rewritten paragraph:

On the other hand, "soft" handover techniques may be employed in Code Division Multiple Access (CDMA) type cellular systems. CDMA is an increasingly popular type of access for cellular communications because a higher spectrum efficiency is achieved compared to FDMA and TDMA techniques which means that more cellular users and/or services can be supported. In addition, a common frequency band allows simultaneous communication between a user equipment unit (UE) and plural base stations. Signals occupying the common frequency band are discriminated at the receiving station through spread spectrum CDMA waveform properties based on the use of a high speed, pseudo-noise (PN) code. These high speed PN codes are used to modulate signals [transmit] transmitted from the base stations and the user equipment units (UEs). Transmitter stations using different PN codes (or a PN code offset in time) produce signals that can be separately demodulated at a receiving station. The high speed PN modulation also allows the receiving station to advantageously generate a received signal from a single transmitting station by combining several distinct propagation paths of the transmitted signal.

Please replace the paragraphs on page 20, beginning at line 3 through line 18 with the following rewritten paragraph:

Fig. 5A further shows the network (e.g., RNC) sending further measurement control messages such as messages 5A-3 and 5A-5[6] to the user equipment unit (UE). Both measurement control messages 5A-3 and 5A-5[6] have command Information elements 6A-3 which indicate that these messages are associated with a command to "MODIFY" the previously sent measurement control message having the same ID. In

accordance with the example of Fig. 5A, and as depicted by the shaded IFSU Information elements 6A-9 thereof, the measurement control messages 5A-3 and 5A-5[6] contain information for updating the virtual active set of base stations. For example, the inter-frequency set update (IFSU) information elements 6A-9 might indicate which particular virtual active set (of possible plural virtual active sets) is to be updated, how that particular virtual active set is to be updated (e.g., a cell added, removed, or replaced), and the CPICH of the cell which is affected by the update. For example, with reference to Fig. 3, whereas the NCL information element 6A-6 of measurement control message 5A-1 might list Cells A - C, the second component of the measurement control messages 5A-3 might (in their IFSU information elements 6A-9) specify that Cell D and Cell E, respectively, are to be added to the first virtual active set.

Please replace the paragraphs on page 21, beginning at line 10 through line 29 with the following rewritten paragraphs:

The scenario of Fig. 5B starts in similar manner as that of Fig. 5A, e.g., with the network (e.g., RNC 26) sending a Measurement Control Message (action 5B-1) to a user equipment unit (UE) . The Measurement Control Message of action [5B-1includes] 5B-1 includes a neighboring cell list (NCL) for advising the user equipment unit (UE) of which cells are to be monitored. The user equipment unit (UE) 30 responds to the Measurement Control Message 5A-1 with a Measurement Report message (action 5B-2).

In the Fig. 5B scenario, the network issues a series of virtual active set messages (VASUM) in order to update the virtual active set(s) maintained by the user equipment unit (UE). Fig. 5B shows two examples such virtual active set messages (VASUM) as being issued, as depicted by actions 5B-3 and 5B-6. The fact that the messages of actions 5B-3 and 5B-6 are, in fact, virtual active set update messages is indicated by their message type information element 6B-1 (Type = VASUM as shown in Fig. 5B). Each VASUM message includes the inter-frequency set update (IFSU) information element 6B-9, as indicated by the [shaded] field IFSU in the VASUM messages of actions [6B-3]

5B-3 and [6B-6] 5B-6. The inter-frequency set update (IFSU) information element 6B-9 has essentially the same format as the corresponding information element of the Measurement Control Message (MCM), as discussed above. That is, the inter-frequency set update (IFSU) information element 6B-9 specifies how the virtual active set is to be updated (e.g., a cell added, removed, or replaced), and the CPICH of the cell which is affected by the update.

Please replace the paragraph on page 23, beginning at line 15 through line 29 with the following rewritten paragraph:

As indicated [by the shading] in Fig. 7 of the NCL information element, the measurement control message of action 7-1 includes a neighboring cell list (NCL) in information element 6A-6 for advising the user equipment unit (UE) as to which cells are to be monitored. In addition, the measurement control message of action 7-1 (or another message) conveys to the user equipment unit (UE) the events which trigger measurements and the events which trigger a virtual active set update. In this regard, the measurement control message of action 7-1 includes the information element 6A-10 which provides the intra-frequency measurement reporting criteria, as well as the information element 6A-11 for reporting the inter-frequency measurement reporting critieria. The information element 6A-10 designates the criteria for updating the virtual active set of cells for non-used frequencies. The information element 6A-11 designates the events that trigger when the estimated quality of a non-used frequency is better than the estimated quality of the currently used frequency, taking into consideration the combined effect of the active set cells and the combined effect of the virtual active set cells.

Please replace the paragraph on page 25, beginning at line 18 through line 30 with the following rewritten paragraph:

In the present invention, inter-frequency measurement reporting criteria relates to the case when CPICHs on different frequencies are compared to each other, while intra-frequency reporting criteria relates to the case when CPICHs on the same frequency are compared to each other. Note that, according to this terminology, intra-frequency measuring reporting criteria also applies for CPICHs on other frequencies than the frequency used for the current active set. Inter-frequency measurements reporting criteria is in this way not related to how the actual measurement is done by the user equipment unit (UE), but rather if the reporting criteria relates to comparison between CPICHs on different frequencies or if the comparisons is done between CPICH's within the same frequency. In order to evaluate if a certain frequency should be used instead of the currently used frequency, the Inter frequency reporting events defined above with reference to Information element 6A-11 are utilized. By using cell individual offset for the cells of the non-used frequency the trigger point of events 2a - 2f can be altered.

Please replace the paragraph on page 30, beginning at line 6 through line 11 with the following rewritten paragraph:

As explained in more detail below, the principles of the present invention are applicable for inter-system handover when a user equipment unit (UE) has dual system capability. Various example scenarios of inter-system handover are illustrated with respect to Fig. 3A - Fig. [D] 3D and are discussed at appropriate junctures below. Advantageously, the example scenarios of inter-system handover can employ the quality estimate aspect of the present invention discussed above.

IN THE CLAIMS

Please amend claims 1, 2, 6, 11, 17, 18, 20, 22 - 24, 26, 28 - 30, 32, 36, 37, 41, 46, 53, 53, and 55 as follows

1. {ONCE AMENDED} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency and performs a measurement respecting a signal on the second frequency for the base stations of the virtual active set, whereby the user equipment unit (UE) can switch to the virtual active set of base stations when the measurement [frequency measurements] made at the user equipment unit (UE) so warrants.

2. {ONCE AMENDED} The network of claim 1, wherein the measurement [frequency measurements] made at the user equipment unit (UE) are triggered either periodically, immediately, or in response to a predetermined event.

6. {ONCE AMENDED} The network of claim 1, wherein when the measurement [frequency measurements] made at the user equipment unit (UE) so warrants, the network issues an inter-frequency handover command to the user equipment unit (UE) so that the user equipment unit (UE) switches to the virtual active set of base stations.

11. {ONCE AMENDED} The network of claim 1, wherein the network sends the user equipment unit (UE) an authorization message that allows the user equipment unit (UE) to autonomously update the virtual active set of base stations when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants.

17. {ONCE AMENDED} The network of claim 1, wherein the network utilizes a frequency quality estimate to determine when the [frequency] measurement[s] made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

18. {ONCE AMENDED} The network of claim 17, wherein the frequency quality estimate is provided by the equation [Equation 1].

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\ j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

20. {ONCE AMENDED} The network of claim 17, wherein the network compares the frequency quality estimate to at least one threshold to determine when the [frequency] measurement[s] made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

22. {ONCE AMENDED} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency and performs a measurement respecting a signal on the second frequency for the base stations of the virtual active set, whereby the user equipment unit (UE) can switch to the virtual

active set of base stations when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants; and wherein the virtual active set of base stations on the second frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

23. {ONCE AMENDED} The network of claim 22, wherein the network utilizes a frequency quality estimate to determine when the [frequency] measurement[s] made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

24. {ONCE AMENDED} The network of claim 23, wherein the frequency quality estimate is provided by the equation [Equation 1].

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\,j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_j is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

28. {ONCE AMENDED} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency and performs a measurement respecting a signal on the second frequency for the base stations of the virtual active set, whereby the user equipment unit (UE) can switch to the virtual active set of base stations when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants; and wherein the virtual active set of base stations on the second frequency comprises a second network system which differs from a first network system provided on the first frequency.

29. {ONCE AMENDED} The network of claim 28, wherein the network utilizes a frequency quality estimate to determine when the [[frequency] measurement[s] made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

30. {ONCE AMENDED} The network of claim 29, wherein the frequency quality estimate is provided by the equation [Equation 1].

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\ j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

36. {ONCE AMENDED} A method of operating a telecommunications network comprising:

a user equipment unit (UE) using one of a cell or a current active set of base stations on a first frequency;

maintaining a virtual active set of base stations on a second frequency;

performing a measurement respecting a signal on the second frequency for the base stations of the virtual active set;

the user equipment unit (UE) switching to the virtual active set of base stations when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants.

37. {ONCE AMENDED} The method of claim 36, further comprising triggering the [frequency] measurement[s] made at the user equipment unit (UE) either periodically, immediately, or in response to a predetermined event.

41. {ONCE AMENDED} The method of claim 36, further comprising, when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants, the network issuing an inter-frequency handover command to the user equipment unit (UE) so that the user equipment unit (UE) switches to the virtual active set of base stations.

46. {ONCE AMENDED} The method of claim 36, further comprising the network sending the user equipment unit (UE) an authorization message that allows the user equipment unit (UE) to update autonomously the virtual active set of base stations when the [frequency] measurement[s] made at the user equipment unit (UE) so warrants.

52. {ONCE AMENDED} The method of claim 36, further comprising using a frequency quality estimate to determine when the [frequency] measurement[s] made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

53. {ONCE AMENDED} The method of claim 52, wherein the frequency quality estimate is provided by the equation [Equation 1].

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\,j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

The scenario of Fig. 5B starts in similar manner as that of Fig. 5A, e.g., with the network (e.g., RNC 26) sending a Measurement Control Message (action 5B-1) to a user equipment unit (UE) . The Measurement Control Message of action 5B-1 includes a neighboring cell list (NCL) for advising the user equipment unit (UE) of which cells are to be monitored. The user equipment unit (UE) 30 responds to the Measurement Control Message 5A-1 with a Measurement Report message (action 5B-2).

In the Fig. 5B scenario, the network issues a series of virtual active set messages (VASUM) in order to update the virtual active set(s) maintained by the user equipment unit (UE). Fig. 5B shows two examples such virtual active set messages (VASUM) as being issued, as depicted by actions 5B-3 and 5B-6. The fact that the messages of actions 5B-3 and 5B-6 are, in fact, virtual active set update messages is indicated by their message type information element 6B-1 (Type = VASUM as shown in Fig. 5B). Each VASUM message includes the inter-frequency set update (IFSU) information element 6B-9, as indicated by the field IFSU in the VASUM messages of actions 5B-3 and 5B-6. The inter-frequency set update (IFSU) information element 6B-9 has essentially the same format as the corresponding information element of the Measurement Control Message (MCM), as discussed above. That is, the inter-frequency set update (IFSU) information element 6B-9 specifies how the virtual active set is to be updated (e.g., a cell added, removed, or replaced), and the CPICH of the cell which is affected by the update.

Please replace the paragraph on page 23, beginning at line 15 through line 29 with the following rewritten paragraph:

As indicated in Fig. 7 of the NCL information element, the measurement control message of action 7-1 includes a neighboring cell list (NCL) in information element 6A-6 for advising the user equipment unit (UE) as to which cells are to be monitored. In addition, the measurement control message of action 7-1 (or another message) conveys to the user equipment unit (UE) the events which trigger measurements and the events which trigger a virtual active set update. In this regard, the measurement control message

of action 7-1 includes the information element 6A-10 which provides the intra-frequency measurement reporting criteria, as well as the information element 6A-11 for reporting the inter-frequency measurement reporting critieria. The information element 6A-10 designates the criteria for updating the virtual active set of cells for non-used frequencies. The information element 6A-11 designates the events that trigger when the estimated quality of a non-used frequency is better than the estimated quality of the currently used frequency, taking into consideration the combined effect of the active set cells and the combined effect of the virtual active set cells.

Please replace the paragraph on page 25, beginning at line 18 through line 30 with the following rewritten paragraph:

In the present invention, inter-frequency measurement reporting criteria relates to the case when CPICHs on different frequencies are compared to each other, while intra-frequency reporting criteria relates to the case when CPICHs on the same frequency are compared to each other. Note that, according to this terminology, intra-frequency measuring reporting criteria also applies for CPICHs on other frequencies than the frequency used for the current active set. Inter-frequency measurements reporting criteria is in this way not related to how the actual measurement is done by the user equipment unit (UE), but rather if the reporting criteria relates to comparison between CPICHs on different frequencies or if the comparisons is done between CPICH's within the same frequency. In order to evaluate if a certain frequency should be used instead of the currently used frequency, the Inter frequency reporting events defined above with reference to Information element 6A-11 are utilized. By using cell individual offset for the cells of the non-used frequency the trigger point of events 2a - 2f can be altered.

Please replace the paragraph on page 30, beginning at line 6 through line 11 with the following rewritten paragraph:

As explained in more detail below, the principles of the present invention are applicable for inter-system handover when a user equipment unit (UE) has dual system capability. Various example scenarios of inter-system handover are illustrated with respect to Fig. 3A - Fig. 3D and are discussed at appropriate junctures below. Advantageously, the example scenarios of inter-system handover can employ the quality estimate aspect of the present invention discussed above.

IN THE CLAIMS

Please amend claims 1, 2, 6, 11, 17, 18, 20, 22 - 24, 26, 28 - 30, 32, 36, 37, 41, 46, 53, 53, and 55 as follows

1. {ONCE AMENDED} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency and performs a measurement respecting a signal on the second frequency for the base stations of the virtual active set, whereby the user equipment unit (UE) can switch to the virtual active set of base stations when the measurement made at the user equipment unit (UE) so warrants.

2. {ONCE AMENDED} The network of claim 1, wherein the measurement made at the user equipment unit (UE) are triggered either periodically, immediately, or in response to a predetermined event.

3. {UNAMENDED HEREIN} The network of claim 1, wherein in response to a measurement trigger criteria, the user equipment unit (UE) performs and reports inter-frequency measurements for the second frequency.

4. {UNAMENDED HEREIN} The network of claim 3, the measurement trigger criteria which causes the user equipment unit (UE) to perform and report inter-frequency measurements for the second frequency is the same criteria which is employed to cause the user equipment unit (UE) to perform and report intra-frequency measurements for the first frequency.

5. {UNAMENDED HEREIN} The network of claim 3, wherein the measurement trigger criteria is one of being periodically, immediate, or in response to a predetermined event.

6. {ONCE AMENDED} The network of claim 1, wherein when the measurement made at the user equipment unit (UE) so warrants, the network issues an inter-frequency handover command to the user equipment unit (UE) so that the user equipment unit (UE) switches to the virtual active set of base stations.

7. {UNAMENDED HEREIN} The network of claim 1, wherein the network provides information regarding the virtual active set of base stations on the second frequency in a measurement control message.

8. {UNAMENDED HEREIN} The network of claim 7, wherein the measurement control message is included in a DCCH control channel.

9. {UNAMENDED HEREIN} The network of claim 7, wherein the measurement control message further includes one of a measurement parameter to be measured and a predetermined measurement event which triggers a measurement.

10. {UNAMENDED HEREIN} The network of claim 1, wherein the network provides at least one member of the virtual active set of base stations on the second frequency in a virtual active set update procedure.

11. {ONCE AMENDED} The network of claim 1, wherein the network sends the user equipment unit (UE) an authorization message that allows the user equipment unit (UE) to autonomously update the virtual active set of base stations when the measurement made at the user equipment unit (UE) so warrants.

12. {UNAMENDED HEREIN} The network of claim 11, wherein the authorization message specifies one of an event or a parameter that can trigger the update of the virtual active set of base stations without the user equipment unit (UE) first having to send a measurement report to the network.

13. {UNAMENDED HEREIN}The network of claim 1, wherein the virtual active set of base stations on the second frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

14. {UNAMENDED HEREIN}The network of claim 1, wherein the virtual active set of base stations on the second frequency comprises a second network system which differs from a first network system provided on the first frequency.

15. {UNAMENDED HEREIN}The network of claim 14, wherein the second network system is universal mobile telecommunications (UMTS) and the first network system is a Global System for Mobile (GSM) system.

16. {UNAMENDED HEREIN}The network of claim 14, wherein the second network system is a system having soft intra-frequency handover and the first network system is universal mobile telecommunications (UMTS).

17. {ONCE AMENDED} The network of claim 1, wherein the network utilizes a frequency quality estimate to determine when the measurement made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

18. {ONCE AMENDED} The network of claim 17, wherein the frequency quality estimate is provided by the equation.

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\ j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

19. {UNAMENDED HEREIN}The network of claim 17, wherein the frequency quality estimate is based on two factors: (1) a carrier Radio Signal Strength Indication

(RSSI); and (2) whether the Base Transceiver Station Identity Code/Base Station Identifier Code (BSIC) has been confirmed or not.

20. {ONCE AMENDED} The network of claim 17, wherein the network compares the frequency quality estimate to at least one threshold to determine when the measurement made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

21. {UNAMENDED HEREIN} The network of claim 20, wherein the at least one threshold is chosen to provide hysteresis protection.

22. {ONCE AMENDED} A telecommunications network wherein a user equipment unit (UE), using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of base stations on a second frequency and performs a measurement respecting a signal on the second frequency for the base stations of the virtual active set, whereby the user equipment unit (UE) can switch to the virtual active set of base stations when the measurement made at the user equipment unit (UE) so warrants; and wherein the virtual active set of base stations on the second frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

23. {ONCE AMENDED} The network of claim 22, wherein the network utilizes a frequency quality estimate to determine when the measurement made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

24. {ONCE AMENDED} The network of claim 23, wherein the frequency quality estimate is provided by the equation.

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_{Aj}} M_{i\ j} \right) + \left(1 - W_j\right) \cdot M_{Best\ j} \right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from UTRAN to UE;

W=0 only the measurement results from the best cell on frequency j is used; and

W=1 only the sum of the measurement results from the cells in the active set is used.

25. {UNAMENDED HEREIN} The network of claim 23, wherein the frequency quality estimate is based on two factors: (1) a carrier Radio Signal Strength Indication (RSSI); and (2) whether the Base Transceiver Station Identity Code/Base Station Identifier Code (BSIC) has been confirmed or not.

26. {UNAMENDED HEREIN} The network of claim 23, wherein the network compares the frequency quality estimate to at least one threshold to determine when the measurement made at the user equipment unit (UE) warrants the switch to the virtual active set of base stations.

27. {UNAMENDED HEREIN} The network of claim 26, wherein the at least one threshold is chosen to provide hysteresis protection.